The Management University of Africa

MUA

Sponsored by the Kenya Institute of Management

UNDERGRADUATE UNIVERSITY EXAMINATIONS

SCHOOL OF MANAGEMENT AND LEADERSHIP

DEGREE OF BACHELOR OF ARTS IN DEVELOPMENT STUDIES

BDS 201 TECHNOLOGY AND DEVELOPMENT

DATE: ***9TH AUGUST 2016***

DURATION: 2 HOURS

MAXIMUM MARKS: 70

INSTRUCTIONS:

1. Write your registration number on the answer booklet.
2. **DO NOT** write on this question paper.
3. This paper contains **SIX (6)** questions.
4. Question **ONE** is compulsory.
5. Answer any other **THREE** questions.
6. Question **ONE** carries **25 MARKS** and the rest carry **15 MARKS** each.
7. **Write all your answers in the Examination answer booklet provided.**

QUESTION ONE

Read the Case Study below carefully and answer the Questions that follow

INNOVATION CHALLENGE

Family farms are very diverse, and innovation systems must take this diversity into account. While some large farms are run as family operations, the main challenge for innovation is to reach smallholder family farms. Innovation strategies must, of course, consider family farms' agro-ecological and socio-economic conditions. Public efforts to promote agricultural innovation for small and medium-sized family farms should ensure that agricultural research, advisory services, market institutions and infrastructure are inclusive. Applied agricultural research for crops, livestock species and management practices should consider the challenges faced by family farms. A supportive environment for producer and other rural community-based organizations can thus help promote innovation.

The challenges facing agriculture and the institutional environment for agricultural innovation are more complex than ever. Effective innovation systems and initiatives must recognize and address this complexity. Agricultural innovation strategies should focus not only on increasing yields and net real incomes, but also on conserving natural resources, and other objectives. An innovation system must consider all stakeholders. Therefore, it must take account of the complex contemporary policy and institutional environment for agriculture and the range of stakeholders engaged in decision-making, often with conflicting interests and priorities, thus requiring appropriate government involvement.

Public investments in agricultural R&D as well as extension and advisory services should be increased to emphasize sustainable intensification, raising yields and closing labour productivity gaps. Agricultural research and advisory services should therefore seek to raise productivity, improve sustainability, lower food prices, reduce poverty, etc. R&D should focus on sustainable intensification, continuing to expand the production frontier in sustainable ways, working systemically and

incorporating both traditional and other informal knowledge. Extension and advisory services should focus on closing yield gaps and raising the labour productivity of small and medium-sized farmers. Partnering with producer organizations can help ensure that R&D and extension services are both inclusive and responsive to farmers' needs.

Institutional innovation

All family farmers need an enabling environment for innovation, including developmental governance, growth-oriented macroeconomic conditions, legal and regulatory regimes favorable to family farms, affordable risk management tools and improved market infrastructure. Improved access to local or wider markets for inputs and outputs, including through government procurement from family farmers, can provide strong incentives for innovation, but farmers in remote areas and other marginalized groups often face formidable barriers. In addition, sustainable agricultural practices often have high start-up costs and long pay-off periods. Hence, farmers need appropriate incentives to provide needed environmental services. Effective local institutions, including farmer organizations, combined with social protection programmes, can help overcome these barriers.

The capacity to innovate in family farming must be supported at various levels and in different spheres. Individual innovation capacity and capabilities must be developed through education, training and extension. Incentives can create the needed networks and linkages to enable farmers, researchers and others to share information and to work towards common objectives. Effective and inclusive producer organizations, such as cooperatives, can be crucial in supporting innovation by their members. Producer organizations can help their members' better access markets and innovate and also ensure a voice for family farms in policy-making.

Innovation is not merely technical or economic, but often requires institutional, systemic and social dimensions as well. Such a holistic view of and approach to innovation can be crucial to inclusion, efficacy and success.

Required:

a. Explain the concept of innovation **(4 marks)**

b. Discuss how you may assess the effectiveness of this innovation considering that it is meant to serve family farms **(9 marks)**

c. Evaluate any Six ways through which this innovation could be diffused **(12marks)**

QUESTION 2

The Commission for Science, Technology and Innovation (NACOSTI) is an important institution if Kenya is to benefit from innovations of her citizens. With relevant examples, discuss any five functions undertaken by this statutory body. **(15 marks)**

QUESTION 3

a. For any meaningful development to occur in a society, science and technology must be prioritized by the governing authorities. Citing any **three** relevant examples analyze how the Kenyan health sector has benefited from information communication technology **(9marks)**

b. Most developing countries face similar healthcare system challenges that need urgent solutions. Explain any four agenda that such government can pursue if this sector is to be adequately strengthened **(6 marks)**

QUESTION 4

a. Citing relevant examples assess any three demerits of information communication technology to the Kenyan society **(10 marks)**

b. Explain in details how biotechnology is being applied to agriculture in Kenya **(5 marks)**

QUESTION 5

Explain in details any five ways in which developing countries may benefit from biotechnology **(15 marks)**

QUESTION 6

a. Critique the Sino-Kenya relationship in view of technology transfer **(10 marks)**

b. Discuss any five areas where technology contributes to Kenya's development agenda **(5marks)**